AMENDMENTS TO THE SPECIFICATION

Please amend the paragraph beginning on line 15 of page 1 as follows:

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Recently, as electronic computers and image processing systems are developed, an amount of information data to be processed and image processing speed are increased rapidly, and audio and visual data are digitalized. Then, an auxiliary storage device, which is not expensive, has a large capacity and can be accessed at a high speed, and a recording medium therefor, especially an optical disk, has rapidly become popular ~~rapidly~~.

Please amend the paragraph beginning on line 11 of page 2 as follows:

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For optical disks such as DVD-ROM, DVD-RAM and DVD-R, information is formed as uneven pits on a substrate or two optically different states of the recording layer made of a phase-change material or an organic material. Further, a reflection layer and an overcoat layer are formed thereon. Then, a reproduction signal is detected as a difference between two states in the intensity of reflecting light due to the existence of a pit or due to structural or chemical ~~change~~ changes when the disk is illuminated with a laser beam.

Please amend the paragraph beginning on line 6 of page 3 as follows:

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Further, when information is recorded with a magnetic film or a thin film made of a phase change material, the additional information can be easily illegally changed or rewritten ~~illegally easily~~. Therefore protection management for copyright of the contents in an optical disk or the like is not possible.

Please amend the paragraph beginning on line 15 of page 11 as follows:

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Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, the invention will be explained below in detail with reference to embodiments. First, a structure of an optical disk according to an embodiment of the present invention will be explained. Fig. 1A is a plan view of the optical disk. The optical disk 100 includes a main information area for recording main information 110 and an additional

information area for recording additional information 101. The main information area has a lead-in area and a TOC area (not shown) as in prior art optical disks. When data are recorded or reproduced, the lead-in area is focused on, and after the reproduction becomes possible, the control data (TOC) 103 of the main information are reproduced from the TOC area. The control data are formed, for example, as pit signals. The additional information area is located at a predetermined area in the inner peripheral portion of the optical disk, but it may be located at a predetermined area in the outer peripheral portion thereof. The additional information is formed as marks of stripes longer in the radial direction (similar to a bar code) and visible for the naked eye. The main information is data (contents) recorded or reproduced by a user, for example, compressed video signal of a moving picture. The additional data are not directly necessary for recording or reproducing the main information, and the main information can be recorded or reproduced even when the additional information is not recorded. The additional information is data such as a serial number which is recorded when the optical disk is fabricated, and it can include management information which can be used for copyright protection such as prohibition of copy or prevention of illegal use of a software. As will be explained later, a part of the additional information may have data to be inhibited to be outputted from a recording and reproducing apparatus.

Please amend the paragraph beginning on line 7 of page 13 as follows:

The stripe data identifier 104 shows the existence of additional information. When an optical disk is reproduced, by reproducing the TOC, it is decided according to the stripe data identifier 104 whether additional data (stripes) are recorded ~~or not~~, so that the additional data 101 can be ~~reproduced~~ surely reproduced.

Please amend the paragraph beginning on line 13 of page 13 as follows:

The additional stripe data identifier 105 shows the existence of a part of additional information added at a later time. Because the additional stripe data identifier 105 and the stripe recording capacity are recorded, when additional information 101 at the first trimming time is already recorded, the maximum capacity which can be recorded for additional information 107 at

the second trimming time can be calculated. Then, when a recorder for additional information records additional information 107 at the second trimming time according to the TOC data, the maximum capacity thereof can be decided. Thus, ~~it can be prevented that~~ recording ~~is~~ performed over 360° to destroy the additional information 101 recorded at the first trimming time can be prevented. As shown in Fig. 1A, by providing a space 108 equal to or larger than one frame of pit signals between the additional information 101 recorded in the first trimming time and that 107 recorded in the second one, it can be prevented that the previous additional information is destroyed.

Please amend the paragraph beginning on line 7 of page 14 as follows:

The stripe back side identifier 106 shows the existence of additional information recorded at the back side of the optical disk. By using the identifier, the barcode-like additional information 101 can be reproduced surely even for an optical disk of a double side type such as a DVD. Further, data can be read from the back side when the stripes of the additional data extend through the two reflecting films, it can be decided whether the additional information is recorded at the back side opposite to a side from which data are reproduced. When the additional information is recorded at the back side of the optical disk, the recording layer at the back side is reproduced.

Please amend the paragraph beginning on line 24 of page 14 as follows:

Next, a format structure of additional information is explained. ~~Fig. 2 shows~~ Figs. 2A and 2B show a physical format of additional information provided as MBCA signals in an optical disk. The MBCA signals include control data 111. The control data 111 is set as 4-byte synchronization code. If the shortest recording period is set to 30μm and the largest radius is set to 23.5 mm, the memory capacity of the additional information is limited to 188 bytes or less after formatting. An identifier in the control data 111 discriminates a case (A) when all the MBCA data 113 can be reproduced to be outputted, and a case (B) when an information 112 inhibited to be outputted on reproduction is included. Thus, it can be easily discriminated according to the control data 111 included in the additional information (stripe signals) whether the optical disk includes signals 112 inhibited to be outputted from a recording and reproducing apparatus. If byte 4 in the control data

is "00000000", all the additional information can be reproduced and outputted from the recording and reproducing apparatus, while if it is "00000010", 28-byte additional information 112 among the 188-byte additional information is inhibited to be outputted from the recording and reproducing apparatus. Further, the data 112 are recorded as ciphered data. Therefore, only the remaining 144-byte data 113 can be externally outputted ~~to the external~~. A reproducing apparatus of optical disk ~~set~~ sets a protective safety mode for recorded information in the optical disk, as will be explained later. Thus, by using the ciphered information 112 inhibited to be outputted on reproduction, an optical disk and a reproducing apparatus therefor can protect files and prevent illegal copies according additional information. Then, the protection and access right of management information of a person, a company or the like can be enhanced very much, and information such as data files can be protected, for example, by preventing illegal outflow of information.

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Please amend the paragraph beginning on line 9 of page 16 as follows:

~~In concrete~~ Specifically, the data 112 inhibited to be outputted from a recording and reproducing apparatus includes a part of identification (ID) information of the disk, a part of ciphered ID information, a part of information on a secret key for deciphering the ciphered ID information or a key for descrambling the main information based on ID information. Because a user cannot reproduce a part of the additional information, illegal processing or interpolation of the additional information such as MBCA data become difficult.

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Please amend the paragraph beginning on line 9 of page 22 as follows:

Next, a method of recording additional information to the magneto-optical disk is explained with reference to ~~Fig. 5~~ Figs. 5A and 5B. Fig. 5A is a block diagram of a recording apparatus for additional information, and Fig. 5B is a diagram of an optical structure of the recording apparatus. For the compatibility with a recording and reproducing apparatus for a DVD disk, RZ (Return to Zero) recording method is used for recording additional information, and the format of recording signals also has compatibility.

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Please amend the paragraph beginning on line 18 of page 22 as follows:

First, by using a magnetization apparatus (not shown), the direction of the magnetization in the recording layer in the magneto-optical disk is arranged in one direction. Because the recording magnetic film 135 is a perpendicular magnetization film having coercive force of 18 kOe, the intensity of magnetic field of an electromagnet in the magnetization apparatus is set to 20 kilogauss. By moving the magneto-optical disk before the magnetization apparatus, the direction of the magnetization in the recording layer can be arranged in one direction. A disk identification (ID) generated by a serial number generator 408 is inputted to an input section 409, and the disk ID is ciphered by a cipher encoder 430 and encoded by an ECC encoder 407. Next, it is modulated by a PE-RZ modulator 410 according to modulation clocks and sent to a laser ~~driver~~ emission circuit 411. Next, as shown in the light ~~condensing~~ convergence section 414 in the laser recording device shown in Fig. 5B, a laser 412 such as a YAG laser having a high output power and a lens 417 such as a cylindrical lens for converging the light in a direction are used to converge a laser beam of a stripe-like rectangle longer in the radial direction on the recording layer, and a plurality of BCAs 120a and 120b are formed along circumferential direction of the disk. As to the recorded signals, the BCAs 120a and 120b are detected with a BCA reader (not shown) and subjected to PE (phase encoding) decoding. Then, it is compared with the recorded data, and if they agree with each other, the recording of the additional information is completed. In the magneto-optical disk, a width of fluctuation in reflectance is within 10 %. Therefore, focus control and the like are not affected.

Please amend the paragraph beginning on line 20 of page 30 as follows:

In the above-mentioned optical disk, the disk substrate 131 is made f a polycarbonate resin, the dielectric layers 132 and 136 are made of a SiN film, and the magnetic films are made of a GdFeCo film, a TbFe film, and a TbFeCo film. However, the disk substrate 131 may be made of a glass or a plastics such as a polyolefin or PMMA. The dielectric layers 132 and 136 may be made of a

different nitride film such as AlN, an oxide film such as TaO_2, a chalcogenide film such as ZnS, or a mixture thereof. The magnetic films may be made of a ferrimagnetic film, including a rare earth and a transition metal, having different materials or a composition, or a magnetic material having perpendicular magnetic anisotropy such as MnBi or PtCo. The structure or the magnetic layer may be a structure made of only one layer or a multi-layer structure.

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Please amend the paragraph beginning on line 10 of page 31 as follows:

~~Fig. 10 shows~~ Figs. 10A and 10B show a flowchart of a reproduction procedure using additional information. When an optical disk is inserted (step 302), focus and tracking are set first (step 301a). For a normal disk, the lead-in area is focused on so that the reproduction becomes possible (step 301b), and the TOC (Control Data) is reproduced (step 301c). When the lead-in area or the TOC is not reproduced, the flow stops as an error.

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Please amend the paragraph beginning on line 18 of page 31 as follows:

As shown in Fig. 1B, in an optical disk of the invention, a stripe identifier 104 is recorded in the TOC in the TOC area 103 in the main information. Therefore, when the TOC is reproduced, it can be decided ~~that~~ whether the stripe is recorded ~~or not~~. Thus, it is decided whether the stripe identifier 104 is 0 or 1 (step 301d). When the stripe identifier 104 is 0, the optical head moves to the outer periphery of the optical disk (step 303), and the rotation phase control is performed to reproduce data in the data area 110 of the ordinary main information (step 303).

a14

Please amend the paragraph beginning on line 3 of page 32 as follows:

The identifier in the main information for the existence of the additional information is detected based on a detection signal detected by one photodetector or on a sum signal of detection signals detected by a plurality of photodetectors in the optical head. If the existence of the additional information is determined according to the identifier, the optical head is moved to a predetermined position in the optical disk where the additional information is recorded. Thus, the stripes, defects

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a15 and the like in the additional information can be ~~detected~~ easily detected. Therefore, the run-up time of the apparatus can be shortened, and the reproduction of the additional information has compatibility among optical disks using different reproduction methods.

Please amend the paragraph beginning on line 9 of page 33 as follows:

a16 By reproducing the signals 111 in the TOC area on stripes, if the stripes do not have a region 112 where the output from the recording and reproducing apparatus is inhibited (step 301g), stripe signals 113 are reproduced (step 304a). Next, it is decided whether the reproduction of the stripe signals 113 is completed ~~or not~~ (step 304b). When the reproduction of the stripe signals 113 is completed, the optical head moves to an outer peripheral of the optical disk (step 304c), and pit signals added with the stripe signals 113 or data of main information are reproduced (step ~~2~~ 304d).

Please amend the paragraph beginning on line 14 of page 35 as follows:

a17 As explained above, by recording the stripe identifier 104 in the pit area in TOC or the like, the stripes or additional information 101 can be surely reproduced ~~surely~~. Further, according to the control data 111 included in the stripe signals, it is decided easily whether the optical disk includes the signals 112 which inhibits a part of the additional information of the stripes to be outputted from the recording and reproducing apparatus.

Please amend the paragraph beginning on line 8 of page 36 as follows:

a18 In a prior art optical disk, additional information such as BCA signals are also reproduced in order to determine whether use, process, copy or the like of the main information is possible ~~or not~~, for processing the main information. However, because all the contents of the additional information can be reproduced and sent to a computer, even if the identification information or the like is ciphered, it may be deciphered. In this embodiment, a part of the additional information may

include information inhibited to be outputted and to be used only in the optical disk drive. Then, reproduction in such a case is explained below.

Please amend the paragraph beginning on line 9of page 37 as follows:

If byte 3 is "02h", the MBCA data are divided into data which can be transmitted and data inhibited to be transmitted (step 311e), and only the data which can be transmitted are transmitted from the recording and reproducing apparatus (step 311f) and sent through the interface 321 to the computer 322. On the other hand, as to the data inhibited to be transmitted from the recording and reproducing apparatus, they are reproduced in the apparatus (step 311g), but are not ~~to be~~ externally outputted ~~to the external~~ (step 311i). Therefore, all the contents of the MBCA signals cannot be confirmed in the computer 322, so that the additional information such as identification inherent to a disk cannot decoded. Therefore, for an optical disk including signals 112 inhibited to be outputted from the apparatus in a part of the additional information, a user cannot reproduce stripe information 112 on the disk identification (ID) or the secret key, and the main information can be protected very strongly for an optical disk and for a recording and reproducing apparatus therefor.

Please amend the paragraph beginning on line 3 of page 38 as follows:

An optical disk is reproduced according to the above-mentioned processes, and the decoding operation is explained briefly by using the recording and reproducing apparatus for an optical disk shown in Fig. 7. In an optical disk 140a wherein BCA signals of additional information are recorded, a stripe identifier 104 (refer to Fig. 1B) showing whether BCA exists ~~or not~~ is recorded in the control data 103 in the main information. For a doubleside type disk such as a DVD-ROM disk 10, two transparent substrates are laminated so that the signal plane is located therein. The recording layer 10 may be comprised of a single layer, or two layers of recording layers 10a and 10b. When the

recording layer consists of two layers, a stripe identifier 104 showing whether a BCA exists ~~or not~~ is recorded in the control data in the first recording layer 10a which is near the optical head 155. In this case, because the BCA exists in the second recording layer 10b, the first recording layer 10a is focused first, and the optical head 155 is moved to a radial position of the control data existing at the most inner side in the second recording region 10b. Because the control data are main information, they are subjected to EFM, 8-15 or 8-15 modulation. Only when the stripe back side identifier 106 in the control data is "1", the second recording layer 10b is focused by a changer 597 for changing between the first and second layers to reproduce a BCA.

Please amend the paragraph beginning on line 23 of page 39 as follows:

In a BCA, signals having ~~an~~ a partially dripped envelope ~~dripped partially~~ are reproduced, as shown in the reproduction signal in Fig. 1C. By setting a second slicing level 516 having a lower light intensity than the first one 515 in the second level slicing section 529, a BCA without no rotation of polarization plane of BCA or a BCA without the reflecting layer is detected, and digital signals are reproduced. The digital signals are demodulated by a PE-RZ ~~demodulator~~ decoder 530a and are subjected to ECC decoding by an ECC decoder 530b to be outputted as BCA data of additional information through an output section 550. Thus, the main information is demodulated and reproduced by the first demodulator 528, and the BCA data as additional information are demodulated and reproduced.

Please amend the paragraph beginning on line 21 of page 42 as follows:

Further, Fig. 14C shows a different type of optical disk in contrast to the lamination type disk shown in Fig. 14A. A dielectric layer 232 is formed on a substrate 231, and ~~A~~ a phase-change type recording layer 260 of thickness 10 nm is formed between the dielectric layer 232 of thickness 100 nm and an intermediate dielectric layer 236 of thickness 10 nm. Further, a reflection layer 237 is formed. As to a DVD-RAM or a DVD-RW, a substrate 231a and an adhesive layer 238a is added.

Please amend the paragraph beginning on line 5 of page 44 as follows:

a23 When the main information is recorded by generating uneven pits in a reflection film, the additional information can be recorded by partially removing the reflection film ~~partially~~.

Please amend the paragraph beginning on line 9 of page 44 as follows:

Next, a method for producing the optical disk is explained. First, a disk substrate 311 having guide grooves or prepits for tracking guide is produced by using injection molding with a polycarbonate resin. Next, a dielectric layer 312 of $ZnSSiO_2$ film of thickness 80 nm is formed on the disk substrate 311 with radio frequency (RF) sputtering with a $ZnSSiO_2$ target in an argon environment. A recording layer 313 made of GeSbTe alloy of film thickness 10 nm is formed on the dielectric layer 312 by using RF sputtering with a GeSbTe alloy target in argon atmosphere. Next, a24 an intermediate dielectric layer 314 made of $ZnSSiO_2$ thickness 10 nm is formed on the recording layer 313 with RF sputtering with a $ZnSSi0_2$ target in an argon environment. Next, a reflecting layer 315 made of A1Cr film of thickness 40 nm is formed on the intermediate dielectric layer 314 with DC sputtering with an AlCr target in an argon atmosphere. Next, an ultra-violet-rays setting resin is applied to the reflecting layer ~~137~~ 315 by dropping it on the reflecting layer 315 and by rotating it with a spin coater at a rotation speed of 3,500 rpm, and it is set with ultraviolet-rays to form an overcoat layer 316 of film thickness of 5 μm. Thus, a first optical disk is produced. On the other hand, a second optical disk is produced without forming the overcoat layer. Finally an adhesive layer 317 is formed by setting an adhesive with hot melt process. Then, the first and second optical disks are laminated to each other.

Please amend the paragraph beginning on line 4 of page 48 as follows:

a25 As mentioned above, the cut-off frequency fc of the low pass filter 161 is set to 1.2 MHz. Fig. 17 shows modulation noises when BCA signals are ~~recording~~ recorded in a phase-change type

DVD-RAM disk. IBM_{max} represents the maximum value or the worst value of the signal of BCA stripe mark portions after the LPF 161 for the reproduction signals shown in Fig. 16A, while IBM_{min} represents the minimum value or the worst value of the signal of non-BCA stripe mark portions. Because, the slicing margin on reproduction ~~is needed~~ needs to be 20 % or higher, the reproducing apparatus cannot reproduce the BCA signals unless IBM_{max}/IBM_{min} is equal to or smaller than 0.8. Fig. 17 shows measured values of IBM_{max}/IBM_{min} when the cut-off frequency of the low-pass filter is changed. It is found that the ratio becomes equal to or smaller than 0.8 when the cut-off frequency is equal to or higher than 1.2 MHz. This condition has an advantage that the BCA signals can be stably reproduced ~~stably~~.

Please amend the paragraph beginning on line 24 of page 54 as follows:

If a media identification (ID) is ciphered so that the disk ID ~~is~~ does not ~~correlated~~ completely correlate to the cipher method ~~completely is~~ as recorded in a BCA, it cannot be guessed with a calculation from the ID. That is, only the copyright owner knows the relationship between the ID and the ciphering calculation. Therefore, it is prevented that a person for producing an illegal copy issues a new ID or a ciphered information thereof illegally.

Please amend the paragraph beginning on line 6 of page 57 as follows:

The operation for a system operator is explained with reference to Fig. 21, which shows a re-transmitter in detail. Further, Figs. 22A - 22H illustrate waveforms in time axis and in frequency axis of the original signals and each video signals. As shown in Fig. ~~14~~ 21, a reproducing apparatus 25a exclusive for a system operator is provided in a re-transmitter 28 provided in a CATV station or the like, and a BCA disk 11a supplied from a movie company or the like is set to the reproducing apparatus. Main information in the reproduced signals by the optical head 29 is reproduced by a data reproduction section 30, and descrambled by a descrambler 31, the original video signals are extended by an MPEG decoder 33 to be sent to a watermark section 34. In the watermark section 34, the original signal shown in Fig. 22A are received and converted by a frequency converter such as

fast Fourier transform (FFT) from time axis to frequency axis. Thus, a frequency spectrum 35a as shown in Fig. 22B is obtained. The frequency spectrum 35a is mixed by a spectrum mixer 36 with an ID signal which has a spectrum shown in Fig. 22C. As shown in Fig. 22D, the spectrum 35b of the mixed signals is not different from the frequency spectrum 35a of the original signals shown in Fig. 22B. That is, the ID signal is subjected to spectrum dispersion. The signal is converted by an inverse frequency converter 37 such as IFFT from frequency axis to time axis, and signals shown in Fig. 22E not different from the original signals (Fig. 22A) are obtained. Because of spectrum dispersion of the ID signal in frequency spectrum, and deterioration of video signals is small.

Please amend the paragraph beginning on line 10 of page 58 as follows:

In the apparatus shown in Fig. 21, video output signals from the watermark section 34 ~~is~~ are sent to an output section 42. When a re-transmitter 28 sends compressed video signals, an MPEG encoder 43 compresses the video signals and a scrambler 45 scrambles them with a cipher key inherent to the system operator and a transmitter 46 sends the scrambled signals through a network or radio communication to an audience. In this case, information 47 on compression parameters such as transmission rate after compression to the MPEG signals is sent from an MPEG decoder 33 to ~~an~~ the MPEG encoder 43. Therefore, the compression efficiency is improved in real-time encoding. Further, because audio signals and compressed audio signals 48 bypass the watermark section 34, they are not expanded or compressed, and they are not deteriorated. When the compressed signals are not transmitted, as-scrambled video output signals 49 are transmitted by a transmitter 46a. For a screen in an airplane or the like, scrambling is not necessary. Thus, video signals including watermarks are transmitted from a disk 11.

Please amend the paragraph beginning on line 5 of page 59 as follows:

In the apparatus shown in Fig. 21, an illegal copier may take out video signals from a bus between blocks or by bypassing the watermark section 34. In order to prevent this copying, buses

between the descrambler 31, the MPEG decoder 33 and the watermark section 34 are ciphered with a shake-hand scheme by the mutual authentication sections 32a, 32b, 32c and 32d provided therein. Signals ciphered by the mutual authentication section 32c at the transmission side are received by the mutual authentication section 32d at the receive side, while the two mutual authentication sections 32c and 32d communicate or shake-hand with each other. Only when the result of mutual authentication is correct, the mutual authentication section 32d at the receive side deciphers the cipher signals. The situation is similar for the other mutual authentication sections 32a and 32b. Therefore, in the embodiment, the ciphers cannot be deciphered as ~~far~~ long as the mutual authentication is not performed. Therefore, even if digital signals are taken out at an intermediate bus, the cipher signals are not deciphered, and the watermark section 34 are not ~~bypassed~~ eventually bypassed. Thus, illegal elimination or interpolation of watermarks can be prevented.

Please amend the paragraph beginning on line 2 of page 60 as follows:

Now, a method is explained for generating signals 38 on the ID information. The BCA data reproduced by a BCA reproduction section from a BCA disk 11a are verified on signature with a public key sent from the BCA disk 11a or the like by a digital signature ~~matching section~~ verifier 40. If the verification is not good (NG), the operation is stopped. If OK, because the data are not interpolated, the ID itself is sent to a watermark data generator 41a. Then, by using ciphered information signals included in BCA data, watermark signals are generated in correspondence to ID signal shown in Fig. 22C. However, the additional information is not outputted outside the drive in a recording and reproducing apparatus, the signals cannot be processed or interpolated. A signal of a secret key may be generated by calculation from an ID data or a card ID in an IC card 41.

Please amend the paragraph beginning on line 20 of page 63 as follows:

First, BCA data are reproduced from the optical disk 140a with the optical head 29, and they are processed by the PE-RZ demodulator ~~350~~ 530a and the ECC decoder 530b. The obtained BCA data are sent by a BCA output section 550. A unique disk ID of say 64 bits (8 bytes) is included in the BCA data of 188 bytes, and the disk ID is outputted.

Please amend the paragraph beginning on line 1 of page 64 as follows:

When input signals are recorded in copy once mode, a scrambler 271 in a recording circuit ~~266~~ scrambles the MPEG video signals by using the disk ID as one of keys. A recorder 272 including a recording circuit converts the scrambled video data to record signals for recording in a RAM disk 140a with an optical head 29.

Please amend the paragraph beginning on line 7 of page 64 as follows:

When reproduction is performed on the RAM disk 140a or the phase-change type RAM to which the scrambled signals are recorded, it is a legitimate use. As shown in Fig. 7, the BCA is read, and a secret key is generated from the ciphered BCA data obtained from a BCA output section 550, and the data are descrambled by a descrambler or a cipher decoder 534a by using the unique disk ID in the BCA data or the secret key as a key. Then, MPEG signals are expanded by an MPEG decoder 261 to provide video signals. However, when the scrambled data in the RAM disk 140a recorded normally are copied in a different RAM disk 140b, that is, when the disk is used illegally, the BCA data of the disk are different on reproduction, and a correct key cannot be obtained for canceling the scrambled data. Therefore, the cipher decoder 534a cannot correctly descramble the data ~~correctly~~. Thus, video signals cannot be obtained. Because signals copied in the second disk or disks in the second or subsequent generations of RAM disk cannot be reproduced, the copyright of the copy once contents added with the watermarks is protected. As a result, the contents are recorded or reproduced only from the RAM disk 140a. In the case of the DVD-RAM shown in Fig. 14A or 14C, recording and reproduction are possible for the one DVD-RAM disk similarly. Because the ciphered BCA

a 33 signals are not outputted from the recording and reproducing apparatus by ciphering the BCAs, it is impossible to extract only the BCA data to read or change the secret key.

Please amend the paragraph beginning on line 9 of page 65 as follows:

In order to more strongly protect the software ~~more strongly~~, first, BCA data in the RAM disk 140a of a user are sent through a communication line to a contents provider. Next, at the contents provider, the BCA data are converted to watermarks in a watermark recorder 264, and video signals are embedded and transmitted. At the user, the signals are recorded in a RAM disk 140a. On a 34 reproduction, at a watermark reproduction and identification section 262, BCA data or the like of a recording permission identifier and watermarks are compared with the counterpart obtained by a BCA output section 550. Only if they agree with each other, the reproduction is permitted. Thus, the copyright is protected more strongly. In this method, even when a digital/analog copy is performed directly from the magneto-optical disk 140a to a VCR tape, the watermarks are detected by a watermark reproduction section ~~23~~ 263, so that illegal digital copy can be prevented or detected. In the case of a DVD-RAM 300a shown in Fig. 7, illegal digital copy can be prevented or detected similarly.

Please amend the paragraph beginning on line 17 of page 68 as follows:

Further, in a recording and reproducing apparatus for a write once optical disk or an overwrite optical disk including the additional information inhibited to be outputted, data file of a 35 information managed personally are ciphered, or data file in a system in a company is ciphered with individual information of an employer. Then, an access right to each optical disk can be set which is used for personal data or for data file of information in a company. Therefore, a system is provided where security of information protected except specified uses, such as information on personal privacy, can be enhanced. It is very difficult to externally access the data file managed and protected as mentioned above ~~from the external~~.